

**U.S. Department of Interior
Bureau of Land Management
Roseburg District, Oregon**

**Darth Raider
Commercial Thinning & Density Management
Decision Document**

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**U.S. Department of Interior
Bureau of Land Management
Roseburg BLM District, Oregon**

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SECTION 1 – THE DECISION

Introduction

Darth Raider is a commercial thinning and forest density management project identified in the Upper Umpqua Watershed Plan (EA # OR -104-02-09) and its subsequent Decision Record (October 8, 2003). This decision is consistent with the Roseburg District Record of Decision and Resource Management Plan (ROD/RMP) adopted in June 1995 and the Upper Umpqua Watershed Plan. The implementation of this decision will meet the following objectives from the Upper Umpqua Watershed Plan (pg. 2):

- For mid seral forests on BLM lands designated for wildlife and fish needs, accelerate stand diversity and development of late-successional characteristics such as large crown ratios, larger lateral branches, multiple canopy layers, and a greater number of larger conifers while maintaining a healthy ecosystem.
- For mid seral forests on BLM lands designated for commercial harvest needs (General Forest Management Areas, Connectivity/Diversity Block), maintain healthy growth rates and contribute timber for the local and regional economy while protecting certain forest components for wildlife.

Darth Raider includes portions of the Basin Shield Commercial Thinning and Density Management which was previously offered for sale on August 28, 2007. Basin Shield was not purchased within 30 days of the sale date and consequently portions of it have been modified and included as Darth Raider Commercial Thinning and Density Management as Units 1, 2, and 3.

Decision

It is my decision to authorize implementation of the Darth Raider Commercial Thinning and Density Management timber sale in Sections 17, 18 and 19, T. 24 S., R. 07 W., Willamette Meridian following the project design features (PDFs) established in the Upper Umpqua Watershed Plan as adjusted in the Decision Record. This timber sale is located within the General Forest Management Area (GFMA) (32.5 acres), Riparian Reserve (21.5 acres), and the Late-Successional Reserve (LSR) (127 acres) land-use allocations. The stands that will be treated are second-growth forest that range in age from approximately 39 to 66 years old. Darth Raider will provide approximately 2.716 MMBF of merchantable timber available for auction. This decision is subject to administrative remedy under 43 CFR § 5003.2 and 5003.3. The action authorized by this decision is described below.

Timber Harvest

Eight units consisting of approximately 176 acres of mid-seral forest, 39-66 years old, will have commercial thinning and density management treatments applied. The average size tree that will be harvested is approximately 12.5 inches diameter breast height (DBH). In addition, five acres will be cleared or brushed for road and spur right-of-ways to access the harvest areas. Therefore, the Darth Raider project is a total of 181 acres.

Treatment Prescription

Commercial thinning and density management will be used to reduce the number of trees in stands dominated by Douglas-fir that are even-aged. Trees will primarily be removed from the suppressed and intermediate canopy classes, although some co-dominant and dominant trees could be removed where necessary to meet specific density objectives. The harvest units are marked to retain approximately 80-120 square feet of basal area per acre (moderate and high residual density).

The prescription for tree marking was designed to create variable spacing between the remaining trees. This was accomplished by occasionally leaving clumps of trees, clearing around large limbed trees, and varying the spacing to select a tree of particular species and/or growth form. Existing snags greater than eight inches DBH were marked for retention in Units 4-8 and snags greater than six inches were marked for retention in Units 1-3.

Trees selected for retention are dominant and co-dominant from a variety of conifer and hardwoods species greater than six inches DBH. Some smaller shade tolerant trees such as western red cedar and western hemlock may be marked to maintain the existing species diversity. Trees selected for retention have at least a 30 percent live crown ratio so that live crown expansion and accelerated diameter growth will be more likely following treatment (Daniel, et. al. 1979)¹.

Variable no-harvest buffers have been placed around both fish-bearing and non-fish bearing streams within the harvest units. No-harvest means that some trees may be felled in these areas to create or enhance habitat but trees but they will not be commercially removed.

All of the streams adjacent to density management units are non-fish bearing intermittent or ephemeral streams. There are non-fish bearing perennial streams (unnamed tributaries to Rader Creek) adjacent to Units #6 and #7 and (unnamed tributaries to Basin Creek) adjacent to Units #1, #2, and part of #3. The project area includes fish-bearing streams downstream of the harvest units along the haul route (Basin Creek and Umpqua River).

There are approximately 452 snags 8-19 inches DBH and 13 snags 20 inches DBH or greater. The need for recruitment of additional green trees as snags and coarse woody debris to meet criteria established in the project design features will be assessed within two years of the completion of harvest activities (refer to pgs. 7-8).

Timber Cruising

This project will yield approximately 2.716 MMBF of timber available for auction.

¹ Daniel, T.W., J. Helms, and F. Baker. 1979. Principles of Silviculture. McGraw Hill Book Company, 2nd edition.

A small amount of additional timber could potentially be included as modifications to this project. These additions will be limited to the removal of individual trees or small groups of trees that are blown down, injured from logging, are a safety hazard, or trees needed to facilitate the action. Historically, this addition has been less than ten percent of the total sale quantity.

Firewood

Firewood cutting and salvaging of logging debris (slash) will occur in cull decks, logging landings, and near roads after commercial thinning and density management activities have been completed.

Timber Yarding

The action will require approximately 139 acres of skyline cable yarding and 37 acres of ground-based yarding (Table 1). In addition, approximately five acres will be cleared or brushed for road and spur right-of-ways to access the harvest areas. Up to 10 acres of additional, incidental ground-based logging may be necessary (i.e. removal of guy line anchor trees, isolated portions of units, etc.) and will occur on gentle slopes (less than 35 percent), during the dry season.

Table 1. Timber Yarding Summary.

Unit	Yarding Method (acres)			
	Aerial	Cable	Ground*	Roads Right-of-Ways
1	0	9	12	1
2	0	13	7	1
3	0	34	14	1
4	0	27	2	1
5	0	19	2	1
6	0	12	0	0
7	0	22	0	0
8	0	3	0	0
Total	0	139	37	5

* Up to 10 acres of additional, incidental ground-based yarding may occur.

Timber Hauling

Approximately 7.5 miles of rocked road and 0.8 miles of unsurfaced road will be used for the hauling of timber, for a total of approximately 8.3 miles of haul route. A total of 7.1 miles of existing road will be renovated (brought back to its original design) and 0.4 miles improved and utilized for wet-season haul. Approximately 0.8 miles of a newly constructed spur will be used for dry-season haul.

Fuel Treatment

Slash within 50 feet of logging landings will be machine-piled and burned (under the direction of a written site specific prescription or “Burn Plan”) or spread over natural surfaced roads (i.e. the first 100 feet of Spurs #1 and #2 and the subsoiled bed of Spur #3). A total of approximately five acres of piles will be burned at landings.

Remaining fine fuels generated during the commercial thinning and density management process will be scattered throughout the treatment units. The portion of Unit #1 adjacent to private lands, approximately three acres, will also have slash hand-piled and burned throughout the unit to provide additional fire safety for the adjacent land owner

Road Activities

The action will include dry season and wet season logging activities and use existing roads to the greatest extent practical. Following the project design features described on pgs. 9-10, road construction, renovation, and decommissioning will be restricted to the dry season (normally May 15 to Oct. 15).

Construction

Approximately 0.8 miles of spur road will be constructed. The operator may rock spur roads at their own expense. Spur roads #3, #5, and #6 are within the LSR and not needed for future harvest entries. Rock placed on spur roads #3, #5, and #6 would be removed after harvest and prior to subsoiling.

Renovation

Approximately 7.1 miles of existing roads will be renovated. Road renovation will consist of installing or maintaining drainage structures (culverts and drainage ditches), reshaping the road surface, replenishing road surface with crushed rock where deficient, and brushing road shoulders. The roads that will be renovated are numbered 24-7-17.0 segment A, 24-7-17.1 segments A,B,C, and a portion of D1, 24-7-17.2 segment A (portion), 24-7-17.4 segment A (portion), 24-7-17.5 segment A (portion), 24-7-17.8 segment A (portion), 24-7-18.1 segment A, 24-7-18.3 segments A and B, and 24-7-19.2 segment A.

Improvement

Approximately 0.4 miles of the existing 24-7-18.1 road (segment B) will be improved. Improvement will consist of adding 6 inches of crushed rock, installing or maintaining drainage structures (culverts and drainage ditches), reshaping the road surface, and brushing road shoulders.

Decommissioning

After harvest, Spurs #3, #5, and #6 (totaling approximately 0.4 miles) will be decommissioned by blocking with a trench barrier after they are subsoiled, water-barred, and mulched with logging slash where available, or mulched with weed free straw when logging slash is not available. After harvest, Spurs #1, #2, and #4 (totaling approximately 0.4 miles) will be decommissioned by water-barring and blocking with a trench barrier.

In addition, approximately 0.1 miles of the natural surface 24-7-19.0 road, and about 2.5 miles of compacted skid trails, landings, and unnumbered natural-surfaced roads will be subsoiled.

Compliance and Monitoring

Compliance with this decision will be ensured by frequent on the ground inspections by the Contracting Officer's Representative. Monitoring will be conducted as per the direction given in Appendix I of the RMP (pgs. 189-209).

SECTION 2 – PROJECT DESIGN FEATURES

The following project design features and best management practices are adopted as part of the implementation of this decision to reduce adverse environmental impacts. They are designed to avoid, minimize or rectify impacts on resources. These measures will also help projects meet the objectives of the Aquatic Conservation Strategy.

Seasonal Restrictions

Seasonal restrictions will be applied based on consultation criteria to reduce impacts to federally listed species and in accordance with best management practices to reduce sedimentation impacts to aquatic species, and to reduce soil compaction in order to maintain soil productivity. These restrictions are described below.

Project Design Features to Minimize Effects to Wildlife Threatened & Endangered Species

Project design features for Darth Raider Density Management were based on project design criteria from the following documents:

- Letter of Concurrence (LOC) regarding the *Reinitiation of consultation on Roseburg District Bureau of Land Management FY 2005-2008 Management Activities* (Ref. # 1-15-05-I-0511 [June 24, 2005]), and the
- *Upper Umpqua Watershed Plan Decision Record* (October 8, 2003).

➤ Northern Spotted Owl

Disturbance

There are no known spotted owl sites, activity centers, or unsurveyed suitable habitat within 65 yards of unit boundaries. Therefore, seasonal restrictions for spotted owls are not necessary unless subsequent surveys locate an activity center or nest site within 65 yards of unit boundaries.

Habitat

Suitable Habitat

- No suitable spotted owl nesting, roosting, and foraging habitat will be removed or modified by this project.

Dispersal-only Habitat

- Approximately 181 acres of dispersal-only habitat will be degraded. The expected post-harvest canopy cover (based on stand average) for units will range between 47 to 83 percent. In addition, within 100 yards of adjacent suitable

habitat, the post-harvest canopy cover will range between 64-79 percent. Therefore, the minimum stand average canopy closure of 60 percent is expected to be maintained in thinned stands. Thus, these stands are expected to retain dispersal function because post-project stand average canopy cover will not fall below 60 percent.

Critical Habitat

- Of the 181 acres of dispersal-only habitat, 126 acres is designated critical habitat (CHU OR-58) for the northern spotted owl. Thinning treatment will degrade 126 acres of critical habitat. However, primary constituent elements present in dispersal habitat will persist post-treatment (USDI Ref. # 1-15-05-I-0511).

➤ Marbled Murrelet

Disturbance

This project is within the Marbled Murrelet Inland Management Zone 1 (within 0-35 miles of the coast). There are no known occupied sites within 100 yards of the units. However, there is unsurveyed suitable habitat within 100 yards of Units #1, #2, #3, #4, #5, #7, and #8. Therefore, seasonal restrictions from April 1st thru August 5th and daily operating restrictions from August 6th thru September 15th, both days inclusive, are necessary for marbled murrelets within 100 yards of the “Marbled Murrelet Habitat Areas” as shown on Figures 1 and 2.

Habitat

- In accordance with the Letters of Concurrence from the U.S. Fish & Wildlife Service for activities on the Roseburg District (Ref. # 1-15-05-I-0511 [June 24, 2005]), surveys for potential structure were conducted (Oct. 2006) following Residual Habitat Guidelines (pgs. 68-69, Plan Maintenance for FY2004, *Annual Program Summary & Monitoring Report – FY2005*). Forty-two trees meeting the criteria for potential structure for marbled murrelets were discovered within the original boundaries of the units.

After reconfiguration of unit boundaries, 45 of the 46 platform trees identified during surveys are located outside of the harvest units. One platform tree is located in Unit #1. Interlocking canopies within at least half-site potential tree height of each of the seven scattered trees will be maintained to retain local conditions of platform trees.

- There is suitable marbled murrelet habitat adjacent to the boundaries of Units #1, #2, #3, #4, #5, #7, and #8. Mid-seral stands adjacent to suitable habitat will be treated with a lighter thinning prescription, maintaining interlocking canopies within at least half-site potential tree height from suitable habitat.

Critical Habitat

Of the 181 acres, 126 acres is designated critical habitat (CHU OR-4-e) for the marbled murrelet. Thinning treatment will modify 126 acres of recruitment habitat (i.e. habitat currently unsuitable, but capable of becoming suitable in the future [Fed. Register

61:26256-26320]). Primary constituent elements will not be removed and will continue to persist post-treatment (USDI Ref. # 1-15-05-I-0511).

➤ Snags

Late-successional Reserve & Riparian Reserves

Snags will be retained or created in the following manner in accordance with direction from the *Upper Umpqua Watershed Plan Decision Document* (pgs. 6-7; Oct. 8, 2003):

- Snags greater than 20 inches DBH and greater than 16 feet tall were located and counted on a stand-by-stand basis (as noted previously on page 3).
- Tree marking was designed to protect existing snags to the extent possible.
- Those snags that pose a safety concern will be cut and left as coarse woody debris.
- Within two years of the completion of harvest activities, if there are less than three snags per acre on north slopes (131 acres) and one snag per acre on south slopes (50 acres), snags will be created on a per acre basis from the larger diameter class of existing live trees to meet the minimum interim needs. Trees damaged from the harvest will be preferentially selected for treatment (e.g. girdling or fungal inoculation) and recruited as snags.
- Currently there are approximately 145 snags on south slopes and 320 snags on north slopes, ranging in size from 8 to 36 inches DBH.

General Forest Management Area

Within the upland portions of the harvest units (i.e. outside of Riparian Reserves), snags will be retained in the following manner:

- Snags greater than 20 inches DBH and greater 16 feet tall were located and counted on a stand-by-stand basis (as noted previously on page 3). The residual stand following harvest will provide a pool of candidate trees for future snag recruitment and additional snags may be created incidentally through the harvest operations.

➤ Coarse Woody Debris

Late Successional Reserve & Riparian Reserve

Coarse woody debris will be retained or created in the following manner in accordance with direction from the *Upper Umpqua Watershed Plan Decision Document* (pg. 7; Oct. 8, 2003) within Units #4, #5, #6, #7, and #8:

- All existing coarse woody debris will be retained.
- Within two years of the completion of harvest activities, up to two trees per acre (approximately 362 trees) will be recruited as additional coarse woody debris. Trees that have fallen since the completion of harvest activities will be credited to recruitment of coarse woody debris. Trees damaged from the harvest will be preferentially selected for falling and recruited as coarse woody debris.

General Forest Management Area

Within the uplands (i.e. outside of Riparian Reserves), coarse woody debris will be retained or created in the following manner in accordance with RMP guidance within Units #1, #2, and #3:

- During partial harvests early in the rotational cycle it is not necessary to fall the larger dominant or co-dominant trees to provide coarse woody debris logs (pg. 53,

Plan Maintenance for FY1996, *Annual Program Summary & Monitoring Report – FY2005*).

- There is approximately 211 linear feet/acre of decay class 1 or 2 coarse woody debris that is typical of the development cycle of the stand (i.e. at least 8-11 inches diameter). The residual stand following harvest will provide a pool of candidate trees for future coarse woody debris recruitment and additional wood debris may be created incidentally through the harvest operations.

Project Design Features to Minimize Erosion and Sedimentation Effects to Aquatic Species

- To protect aquatic resources within riparian areas, a variable width streamside no-harvest buffer has been established along all streams and wet areas. The variable buffer width is ten to 60 feet from the outer edge of the active stream channel for all non-fish bearing streams. The buffer width varies to include areas of instability, areas of riparian vegetation, and sensitive areas identified during site review. There are no fish bearing streams adjacent to the harvest units.
- At a minimum, one-tree retention has been maintained along the stream bank for bank stability. Minimum buffer widths have been used primarily on first order ephemeral or highly interrupted intermittent streams. These streams lack riparian vegetation, riparian habitat components, soil stability issues, and potential impact to downstream fisheries. Management within the buffer could include selected felling and/or girdling of trees where doing so will benefit riparian habitat. Trees will not be commercially removed from this buffer area.
- Stream channels and riparian habitat will be protected from logging damage by directionally felling trees that are within 100 feet of streams away from the streams and yarding logs away from or parallel to the streams.
- Yarding corridors parallel to non-fish bearing streams will be at least 40 feet way from the edge of the active stream channel and will be avoided along swale bottoms.
- Skyline yarding is required where cable logging is specified. This method will limit ground disturbance by requiring at least partial suspension during yarding. For all cable yarding, corridors will be 15 feet in width or less.
- Partial suspension and waterbarring yarding trails that are excessively furrowed will reduce the risk of slope failure and limit erosion. Partial suspension lifts (i.e. suspends) the front end of the log during in-haul to the landing, thereby lessening the “plowing” action that disturbs the soil. In some limited, isolated areas partial suspension may not be physically possible due to terrain or lateral yarding. Excessive soil furrowing that occurs from “plowing” action will be hand waterbarred and filled with logging slash and/or other organic debris.

Project Design Features to Minimize Effects of New Road Construction and Road Use

- Roads will be located on ridge tops and on stable slopes. All road construction, renovation, improvement, and decommissioning will occur during dry periods of the year, generally between May 15 and the onset of regular fall rains or as determined by weather patterns.

- Over-wintering natural surface spur roads in a condition that is resistant to erosion and sedimentation. This would be done by building, using, and winterizing natural surface spur roads prior to the end of the operating season.
- Winterization of natural surface roads would include: installation of waterbars, mulching the running surface with weed-free straw, seeding and mulching bare cut and fill surfaces with native species (or a sterile hybrid mix if native seed is unavailable), and blocking. Implementation of over-wintering measures would be restricted to the dry season (normally May 15th to October 15th).
- Erosion control measures (waterbarring, seeding, mulching, straw bales, bioengineering, etc.) will be applied where needed on newly constructed roads, renovated roads, improved roads, or decommissioned roads and spurs.
- All haul routes used during wet season hauling will be inspected prior to haul activities to assess the current conditions of those roads as they pertain to sedimentation concerns to adjacent streams. Where winter haul occurs along a rocked route with defined stream crossings, road design is currently adequate. Project design features that reduce sedimentation such as silt fences, gravel lifts, and weather dependant operation specifications will prevent sediment contribution to live streams. Activities will be suspended when conditions are such that meaningfully, measurable stream-sedimentation will occur. The suspension will be lifted when conditions improve or remediation measures are implemented.
- On very steep slopes (70 percent and greater) accessed by the rocked 24-7-18.1 road, no cable yarding shall be permitted when soil moisture levels are high enough to squeeze water from soil samples. The soil would be too wet if cable yarding would create glazed imprints on the soil surface that would channel water downslope – generally greater than 30 percent soil moisture.

Project Design Features to Maintain Soil Productivity

- Ground-based operations will only occur when soil moisture conditions limit effects to soil productivity. These conditions generally occur between May 15th and the onset of regular fall rains [typically October 15th]. During ground-based operations, soil moisture levels usually must be below 20 percent to a depth of ten inches. In some situations soil moisture levels would need to be considerably less than 20 percent including: low slash levels, adverse skidder/forwarder haul up the steeper ground-based slopes, and harvesters on slopes 35 to 45 percent. After ground-based operations have begun, certain topographic positions that normally dry slower (e.g. depressions, swale bottoms and north-facing slopes) may need to be avoided or yarded later. The Contract Administrator will approve all ground-based operation start-up dates. Stop work orders can be issued if unseasonably wet conditions develop during the dry season that increases soil moisture above acceptable levels.
- Forwarder, skid, and swing yarding trails will be designated. The forwarder will operate on branch and limb covered areas traversed by the harvester.
- Harvesters and tree fallers will cut trees no further than twelve inches from the ground in trails so that there will be enough stump clearance for subsoiling excavators.

- Detrimental compaction in skid trails used in this harvest, landings, and log deck areas will occupy less than 10 percent of the ground-based portion of the harvest units. Detrimental compaction is defined as compaction that increases soil bulk density by 15 percent or more or alters soil structure to a depth of four inches or more.
- Skid trails which were created by prior entries will be re-used to the extent practical.
- Ground-based operations will be limited to slopes less than 35 percent. A harvester will be allowed on slopes between 35 and 45 percent for short slope pitches (up to 150 feet).
- Within the Soil Moisture Restriction areas shown in Figure 1 (in Unit #3), no cable yarding shall be permitted when soil moisture levels are high enough to squeeze water from soil samples. The soil would be too wet if cable yarding would create glazed imprints on the soil surface that would channel water downslope – generally greater than 30 percent soil moisture
- To mitigate for soil compaction, approximately 0.6 miles of roadbed (as described previously on page 5) will be subsoiled. In addition, approximately 2.5 miles of skid trails, landings, and unnumbered natural-surfaced roads will be subsoiled. Subsoiled trails and road beds will be mulched with logging slash where available or with weed free straw if logging slash is not available. In addition, some topsoil will be pulled back onto the sub-soiled surface from immediately adjacent areas.
- Slash piles will be burned during the late fall to mid-spring season when the soil and duff layer moisture levels are high (ROD/RMP, pg. 140) and the large down logs have not dried. This practice will confine burn impacts to the soil underneath the piles and will lessen the depths of impacts (i.e., loss of organic matter, and the change of soil physical properties, ecology and soil nutrients).

Project Design Features to Minimize Effects from Noxious Weeds

- Construction and logging equipment/machinery will be cleaned prior to moving into the project site. Cleaning will remove weed seed and help control and prevent the spread of noxious weeds.
- Areas of ground disturbance will be mulched with logging slash. If logging slash is unavailable, then native grass seed or a suitable alternative (i.e., native straw, wood chips, etc.) would be applied following ground disturbance.
- Noxious weed infestations and ground disturbance mitigations will be monitored.

Miscellaneous Project Design Features

- **Cultural resources** - Cultural resource inventories were completed previously (July 2006 & June 2007) and no cultural resources were identified. Stipulations will be placed in the contract to halt operations in the event of inadvertent discoveries of new cultural resource sites (e.g. historical or prehistorical ruins, graves, fossils or artifacts).
- **Hazardous Materials** - To prevent and report accidental spills of petroleum products or other hazardous material and provide for work site cleanup:

- The operator will be required to comply with all applicable State and Federal laws and regulations concerning the storage, use and disposal of industrial chemicals and other hazardous materials.
- All equipment planned for in-stream work (e.g. culvert and/or ditch line upgrades) will be inspected beforehand for leaks.
- Accidental spills or discovery of the dumping of any hazardous materials will be reported to the Authorized Officer and the procedures outlined in the “Roseburg District Hazardous Materials (HAZMAT) Emergency Response Contingency Plan” will be followed.
- Hazardous materials (particularly petroleum products) will be stored in appropriate and compliant UL-Listed containers and located so that any accidental spill will be fully contained and will not escape to ground surfaces or drain into watercourses.
- Other hazardous materials such as corrosives and/or those incompatible with flammable storage shall be kept in appropriate separated containment.
- All construction materials and waste will be removed from the project area.

SECTION 3 – THE DECISION RATIONALE

This decision implements the guidance provided in the Upper Umpqua Watershed Plan Decision signed October 8, 2003 for that portion of the plan covering the Darth Raider Density Management project area and portions formerly known as Basin Shield Commercial Thinning and Density Management (i.e Units #1, #2, and #3). It incorporates the “adjustments made” as described in the Upper Umpqua Watershed Plan decision (pgs. 3-9).

The project design features listed above will minimize soil compaction, limit erosion, protect slope stability, protect wildlife, protect air and water quality, and protect fish habitat, as well as protect other identified resource values. I have reviewed the resource information contained in Table 2 “Summary of Effects of the Action” (below) and in Appendices A-I (available upon request from the Swiftwater Field Office).

This decision recognizes that impacts could occur to some of these resources; however, the impacts to resource values will not exceed those identified in the *Final - Roseburg District Proposed Resource Management Plan / Environmental Impact Statement* (PRMP/EIS, 1994). This decision provides timber commodities resulting from silvicultural treatments whose effects to the environment are within those anticipated and already analyzed in the PRMP/EIS.

As a result of this decision, commercial thinning and density management actions will be undertaken to: (1) maintain healthy growth rates and contribute timber for the local and regional economy while protecting certain forest components for wildlife in stands on BLM lands within GFMA, and (2) accelerate stand diversity in mid-seral forests on BLM lands within the Riparian Reserves and LSR.

The variable density thinning treatments (i.e. low-, moderate-, and high-residual density) will develop late-successional characteristics more quickly including multiple canopy layers, large trees with large limbs, and vegetative diversity. In the long-term, the quality of dispersal habitat

for the northern spotted owl will improve, as well as provide future nesting habitat for the northern spotted owl and marbled murrelet

My predecessor reviewed the public comments from the EA and provided additional time for interested parties to develop input and to participate in a field tour of the project area. This interactive participation resulted in substantive adjustments in the proposed action initially presented in the Upper Umpqua Watershed Plan EA. These adjustments were incorporated in the Upper Umpqua Watershed Plan Decision signed October 8, 2003 and subsequently in the project design features for this project.

Coho Salmon

On October 9, 2007 in Trout Unlimited v. Lohn (CV-06-1493-ST), U.S. District Court Judge King ordered the National Marine Fisheries Service (NMFS) to issue a new final listing rule for the Oregon Coast coho salmon (*Oncorhynchus kisutch*) consistent with the Endangered Species Act (ESA) within 60 days of the Court's decision. On October 26, 2007, Judge King granted NMFS' request to extend its deadline to issue a new final listing rule until February 4, 2008.

On November 27, 2007, the National Marine Fisheries Service (NMFS) notified the OR/WA BLM that the Oregon Coast coho salmon (*Oncorhynchus kisutch*) was proposed for listing as threatened under the ESA. The BLM is required to confer with NMFS on any action that the BLM determines is "likely to adversely affect" the Oregon Coast coho salmon. There is no requirement for the BLM to confer with NMFS on actions that are determined to be "not likely to adversely affect" proposed species. The Oregon Coast coho is also considered a Bureau Sensitive species.

Prior to NMFS's determination, the Roseburg District made a determination that this project will result in a "may effect, not likely to adversely affect [NLAA]" in the Upper Umpqua Watershed Density Management Plan Biological Assessment (Sept. 30, 2005) prepared for consultation with NMFS.

Special Status Species

On July 26, 2007, the Oregon/Washington BLM revised its Special Status Species list and policy in IM-OR-2007-072. Updates to Oregon/Washington special status species include: the removal of the previous categories of Bureau Assessment and Bureau Tracking, the addition of the category of "Strategic Species", updates to the criteria for the creation of Bureau Sensitive species, and changes to the list of species that are Sensitive or Strategic.

Bureau Sensitive species will continue to be managed in compliance with BLM National Manual and OR/WA State Policy (BLM 6840) as they were prior to IM-OR-2007-072. Policies from BLM 6840 do not apply to Bureau Strategic species (IM-OR-2007-072). For Strategic species, analysis in NEPA documents is not required but if sites are located, field units are required to collect occurrence data and enter into the corporate database (i.e. GeoBOB).

Survey and Manage

On July 25, 2007, a new *Record of Decision to Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* was signed by the Assistant Secretary, U.S. Department of the Interior. The effect of the decision eliminated the provisions of the Survey and Manage program set forth in the *Record of Decision for Amendments (ROD) to Forest*

Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. The 2007 *Record of Decision* addressed both the deficiencies in the 2004 *Record of Decision* set aside by the District Court in Northwest Ecosystem Alliance et al. v. Rey et al. and the decision of the United States Court of Appeals for the Ninth Circuit in Klamath Siskiyou Wildlands Center et al. v. Boody et al. Consequently, the decision to eliminate Survey and Manage is effective on for this project.

Aquatic Conservation Strategy (ACS)

In March 2007, the U.S. District Court, in Pacific Coast Federation of Fishermen's Association, et al. v. National Marine Fisheries Service, et al. and American Forest Resource Council, an Oregon nonprofit corporation, et. al. set aside the 2004 Final Supplemental Environmental Impact Statement for Aquatic Conservation Strategy (ACS FSEIS). The Upper Umpqua EA was written in 2003, according to the Northwest Forest Plan and prior to the 2004 ACS FSEIS. As such, the analysis within the Upper Umpqua EA addresses ACS in a Manner consistent with the March 2007 ruling.

- Standards and Guidelines, in effect in 2003 (prior to the 2004 ACS FSEIS), were adhered to when developing the project objectives and project design features (ROD/S&G, pgs. C-2 through C-3, C-11 through C-61) for application at the site level.
- The Upper Umpqua Watershed Plan (2003) is a combined watershed and environmental analysis. This plan contains the sixth and seventh field watersheds considered during the planning of this project.
- Cumulative effects were considered in the Upper Umpqua Watershed Plan (pgs. 20, 27-28, 32-33, and E-14).
- The Upper Umpqua Watershed Plan analyzed ACS objectives and does not retard or prevent the attainment of ACS objectives (in effect in 2003). The Darth Raider project objective to accelerate stand diversity and development would maintain and restore the distribution, diversity, and complexity of watershed and landscape scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted. Appendix D of the Upper Umpqua Watershed Plan EA outlines how ACS objectives would be achieved or achievement of those objectives would not be precluded (pgs. D-1 through D-6).

I find the Darth Raider Commercial Thinning & Density Management complies with the ACS requirements set forth in the ROD/RMP (1994) and the subsequent District Court interpretations in the Pacific Coast Federation of Fisherman's Association (PCFFA) v. National Marine Fisheries Service (NMFS), 71 F. Supp. 2d 1063, 1069 (W.D. Wash. 1999).

SECTION 4 – PUBLIC INVOLVEMENT

For the Upper Umpqua Watershed Plan Environmental Assessment, comments were solicited from affected tribal governments, adjacent landowners and affected State and local government agencies. No comments were received from these sources. During the seventy-five day public review period for the Upper Umpqua Watershed Plan, comments were received from four individuals or organizations. As previously described in Section 3, comments and subsequent interaction with the public helped formulate the Upper Umpqua Watershed Plan decision (October 8, 2003) and is reflected in both that decision (pgs. 3-9) and in the project design features for this project.

Public notification of Darth Raider was available through the Summer 2007 and Fall 2007 Quarterly Planning Updates. In addition, the portions of this sale formerly known as Basin Shield were included in the Spring 2007 and Summer 2007 Quarterly Planning Updates. No comments or information have been received pertaining to the design of the Darth Raider Density Management project.

SECTION 5 – PROTEST PROCEDURES

The decision described in this document is a forest management decision and is subject to protest by the public. In accordance with Forest Management Regulations at 43 CFR § 5003 Administrative Remedies, protests of this decision may be filed with the authorized officer [Marci L. Todd] within 15 days of the publication date of the notice of decision/timber sale advertisement in *The News-Review*, Roseburg, Oregon.

43 CFR § 5003.3 subsection (b) states that: “Protests shall be filed with the authorized officer and shall contain a written statement of reasons for protesting the decision.” This precludes the acceptance of electronic mail or facsimile protests. Only written and signed hard copies of protests that are delivered to the Roseburg District Office will be accepted. The protest must clearly and concisely state the reasons why this decision is believed to be in error.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, please be advised that your entire comment (including your personal identifying information) may be made publicly available at any time. While you can request that the BLM withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Protests received more than 15 days after the publication of the notice of decision/timber sale advertisement are not timely filed and shall not be considered. Upon timely filing of a protest, the authorized officer shall reconsider the decision to be implemented in light of the statement of reasons for the protest and other pertinent information available to her. The authorized officer shall, at the conclusion of her review, serve her decision in writing to the protesting party. Upon denial of a protest the authorized officer may proceed with the implementation of the decision.

For further information, contact Marci L. Todd, Field Manager, Swiftwater Field Office, Roseburg District, Bureau of Land Management, 777 NW Garden Valley Blvd; Roseburg, OR. 97470, (541) 440-4931.

Marci L. Todd, Field Manager
Swiftwater Field Office

Date

Table 2. Summary of Effects of the Action: Darth Raider Density Management.

Context (What?)	Intensity (How Much?)	Reason for not being significant.
Cultural Resources		
Cultural Resources.	Inventories were completed (July 2006; June 2007) for cultural resources. Section 106 responsibilities under the National Historic Preservation Act were completed, in accordance with the 1998 Oregon State Historic Preservation Office protocols. No cultural resources were identified.	There will be no impacts to cultural resources.
Botany & Noxious Weeds (refer to <i>Appendix A</i> for details)		
Federally threatened (FT) Kincaid's lupine and the federally endangered (FE) rough popcorn flower .	Surveys were completed (May 2006; May 2007) and no sites were discovered.	No impacts to these two federally listed plant species will occur since there are no known sites within the project area.
Bureau Sensitive botanical species.	Surveys were completed (May 2007) and no sites were discovered.	No impacts to Sensitive or Strategic botanical species will occur since there are no known sites within the project area.
Bureau Strategic botanical species.	Surveys were completed (May 2005; May 2007) and no discoveries of Strategic botanical species were made.	Districts are required to enter occurrence data into the corporate database (GeoBOB) when sites of Strategic Species are discovered but they will not be considered as Special Status Species for management purposes (IM-OR-2007-072).
Noxious weeds.	There are scattered patches of Himalayan blackberry (approx. one acre), Canada thistle (approx. 0.5 acre), and Scotch broom (approx. 16 acres) throughout the project area.	The roads were treated both chemically and mechanically in FY2005. The project area will be monitored for treatment effectiveness and follow-up treatments will be conducted as necessary. The project design features will minimize the spread of noxious weeds.
Soils (refer to <i>Appendix B</i> for details)		
Mass Wasting and Landslides.	There are approximately 17 acres of soils considered fragile due to slope gradient but suitable for forest	The probability of landslide occurrence on FGR soils will be slightly higher than the No Action Alternative but still low to moderate.

Context (What?)	Intensity (How Much?)	Reason for not being significant.
	<p>management (FGR) within the units.</p> <p>In the short-term (less than ten years following harvest), the probability of landslide occurring on the 17 acres of FGR slopes will be in the low to moderate range (less than 30 percent). Any landslides that occur will likely be few in number and less than 0.15 acres in size.</p> <p>About four of the 17 FGR acres is situated where landslides less than 0.15 acres in size could reach a non-fish bearing stream in Unit #6.</p>	<p>Effects of sediment in the stream bed from small landslides would have a low probability of being detected more than a few hundred feet downstream from the landslide during normal flow conditions. This is because small streams have low capacity for carrying sediment due to their small size and low flows.</p>
Soil Productivity.	<p>Following harvest and subsequent subsoiling as described above (pgs. 5, 11), it is estimated that soil productivity will be slightly decreased (net loss of approx. one acre) in the short-term (less than ten years).</p>	<p>Subsoiling will accelerate the long-term recovery of soil productivity.</p>
Hydrology (refer to <i>Appendix C and D</i> for details)		
Peak Flows within the Analytical Hydrologic Units (AHU).	<p>Commercial thinning and density management is not expected to have any measurable impact on peak flow within fish-bearing waters below the treatment areas.</p> <p>At the project level there may be increases in peak flows during smaller storm events (less than two year interval) in small non-fish bearing streams.</p>	<p>Thinning of overcrowded trees is not expected to have any measurable impact on stream flow within fish-bearing waters below the treatment areas. No measurable change in peak flows.</p>
Sedimentation.	<p>Project design features will minimize soil erosion and sedimentation effects to aquatic species and aquatic</p>	<p>Sedimentation will be maintained below meaningfully measurable levels or haul will be suspended.</p>

Context (What?)	Intensity (How Much?)	Reason for not being significant.
	<p>habitat.</p> <p>Sediment produced, as a result of haul, will be of such small magnitude that it will not be meaningfully measurable.</p>	
Fisheries (refer to <i>Appendix E</i> for details)		
<p>Oregon Coast Coho Salmon. On November 27, 2007, the National Marine Fisheries Service (NMFS) notified the OR/WA BLM that the Oregon Coast coho salmon was proposed for listing as threatened under the ESA. NMFS has not issued a new final listing rule for the Oregon Coast coho salmon. The coho is still considered a Bureau Sensitive species.</p>	<p>The Roseburg District made a determination that this project will result in a “may effect, not likely to adversely affect [NLAA]” in the Upper Umpqua Watershed Density Management Plan Biological Assessment (Sept. 30, 2005) prepared for consultation with NMFS.</p>	<p>Project will not adversely affect the Oregon Coast Coho Salmon.</p>
<p>Essential Fish Habitat (EFH) for Coho Salmon and Chinook salmon.</p>	<p>Conservation measures incorporated into the project design features will prevent adverse effects to essential fish habitat.</p>	<p>Project will not adversely affect essential fish habitat. Therefore, consultation with NMFS is not required.</p>
<p>Bureau Sensitive and Bureau Strategic fish species.</p>	<p>Oregon Coast coho salmon (Bureau Sensitive) and Oregon Coast steelhead (Bureau Strategic) are documented within the project area. Umpqua Chub (Bureau Sensitive) is suspected downstream of the project area.</p> <p>The project area includes fish-bearing streams downstream of the harvest units along the haul route.</p>	<p>Project design features will minimize soil erosion and sedimentation effects to aquatic species and aquatic habitat.</p>
Wildlife (refer to <i>Appendices F, G, H, and I</i> for details).		

Context (What?)	Intensity (How Much?)	Reason for not being significant.
<p>In accordance with the Endangered Species Act, consultation with the U.S. Fish and Wildlife Service (USFWS) has been completed.</p>	<p>A letter of concurrence from the USFWS for the re-initiation of consultation on Roseburg District Bureau of Land Management FY 2005-2008 Management Activities [Ref. # 1-15-05-I-0511] was received June 24, 2005.</p>	<p>The USFWS concurred that this action is <i>not likely to adversely affect</i> the northern spotted owl, northern spotted owl critical habitat, marbled murrelet, and marbled murrelet critical habitat (pg. 30 [Ref. # 1-15-05-I-0511]). Project design features will be implemented in compliance with the letter of concurrence.</p>
<p>Noise/Visual Disruption of Northern Spotted Owl nesting behaviors.</p>	<p>There are no known spotted owl nests, activity centers, or unsurveyed suitable habitat within 65 yards of the harvest units.</p>	<p>No disruption effects to spotted owls will occur.</p>
<p>Northern Spotted Owl Habitat.</p> <p>There are four northern spotted owl sites (includes ten activity centers) that are located within 1.5 miles (<i>Coast Range provincial home range</i>) of the proposed harvest units. The South McGee (MSNO 2299A) site has an established 100-acre Known Owl Activity Center (KOAC).</p>	<p>Thinning and density management will degrade 181 acres of dispersal habitat. However, since the treated stands will not be modified below 40 percent canopy cover, they will still function as dispersal habitat.</p> <p>No suitable habitat will be modified or removed.</p>	<p>Treatment of the mid-seral stands will improve the quality of dispersal habitat within 5-10 years.</p> <p>Density management within the 21.5 acres of Riparian Reserve and 127 acres of LSR will diversify the forest for spotted owl use by developing larger diameter trees with multiple canopy layers. Beneficial effects to dispersal habitat from commercial thinning and density management will persist until the upland GFMA portions (32.5 acres) of the stands undergo final harvest in the future.</p> <p>The USFWS concurs that this action <i>is not likely to adversely affect</i> spotted owls (pg. 19 [Ref. # 1-15-05-I-0511]).</p>
<p>Critical Habitat for the Northern Spotted Owl.</p> <p>Darth Raider is located within designated critical habitat unit OR-58 for the northern spotted owl.</p>	<p>Commercial thinning and density management will degrade 126 acres of dispersal habitat within designated Critical Habitat. Thinning treatments will maintain canopy cover above 40 percent. Therefore, the stand will continue to provide</p>	<p>Because the primary constituent elements present in dispersal habitat will persist post-treatment, the USFWS concurs that this action <i>is not likely to adversely affect</i> spotted owls (pg.28 [Ref. # 1-15-05-I-0511]).</p>

Context (What?)	Intensity (How Much?)	Reason for not being significant.
	<p>sufficient primary constituent elements for spotted owl dispersal.</p> <p>No suitable habitat will be modified or removed.</p>	
<p>Noise/Visual Disruption of Marbled Murrelet nesting behaviors.</p> <p>The project area is located approximately 34 miles from the coast, within Zone 1.</p>	<p>There is unsurveyed suitable marbled murrelet habitat adjacent to the boundaries of Units #1, #2, #3, #4, #5, #7, and #8.</p> <p>The harvest units are approximately 2.1 miles from the nearest known occupied marbled murrelet site (Leonard Creek [MSNO-R3001]).</p>	<p>To avoid disruption to the marbled murrelet, seasonal restrictions from April 1st thru August 5th, and Daily Operating Restrictions (two hours after sunrise to two hours prior to sunset) from August 6th thru September 15th will be implemented within 100 yards of unsurveyed suitable habitat.</p> <p>The USFWS concurs that the density management activities <i>are not likely to adversely affect</i> marbled murrelets (pg. 16 [Ref. # 1-15-05-I-0511]).</p>
<p>Marbled Murrelet Habitat.</p>	<p>Suitable nesting habitat will not be removed within or adjacent to the project area.</p> <p>Within the stands prescribed for thinning and density management, surveys for trees with suitable platform structures were conducted (September 2006; March 2007) following the Residual Habitat Guidelines.</p> <p>Forty-six trees were detected that met the criteria as potential murrelet nest trees. All of these trees were either protected within the unit or excluded from the harvest unit.</p>	<p>Density management will facilitate the development of future nesting habitat by increasing tree and limb growth rates; fostering the development of nesting platforms.</p> <p>In addition, thinning younger trees from around the older, large limbed trees will allow greater access for nesting providing an opportunity for murrelets to occupy these stands earlier.</p> <p>The USFWS concurs that the density management activities <i>are not likely to adversely affect</i> marbled murrelets (pg. 10 [Ref. # 1-15-05-I-0511]).</p>
<p>Critical Habitat for the Marbled Murrelet This project is located within designated critical habitat unit OR-</p>	<p>Within the stands prescribed for thinning and density management under this decision, surveys for trees with suitable platform structures</p>	<p>Based on compliance with the Residual Habitat Guidelines, density management activities will not measurably affect the primary constituent elements of critical</p>

Context (What?)	Intensity (How Much?)	Reason for not being significant.
04- <i>e</i> for the marbled murrelet.	<p>were conducted (September 2006; March 2007) following the Residual Habitat Guidelines.</p> <p>Density management will degrade 126 acres of designated critical habitat but will maintain canopy cover above 40 percent.</p> <p>No suitable habitat will be removed or modified.</p>	<p>habitat because the potential nesting structure will be excluded from the treatment area or protected within the treatment area.</p> <p>Thinning activities within critical habitat are intended to improve forest health conditions or facilitate the development of structural characteristics of unsuitable habitat. This action is consistent with recovery actions described in the Marbled Murrelet Recovery Plan (recovery action 3.2.1.3).</p> <p>The USFWS concurs that this action <i>is not likely to adversely affect</i> marbled murrelets (pg. 16 [Ref. # 1-15-05-I-0511]).</p>
American Peregrine Falcon (Bureau Sensitive).	Harvest units do not contain suitable nesting habitat (e.g. cliffs or rock outcrops) for the peregrine falcon. However, based on the distribution of known peregrine sites within the watershed, peregrines are expected to hunt within the project area.	The action will not affect foraging habitat in a measurable way.
Bald Eagle (Bureau Sensitive). The bald eagle was delisted on July 9, 2007 as “threatened” under the Endangered Species Act (FR 72; No 130; 37346-37372). It is currently considered Bureau Sensitive.	<p>No noise/visual disruption effects to bald eagles will occur due to this action since there are no known nests within 0.5 miles of the harvest units. Based on 2007 surveys, the nearest nest site (Indian Creek) is approximately 1.2 miles southeast of the proposed project area.</p> <p>No suitable habitat will be removed or modified.</p>	No disruption effects to nesting bald eagles will occur and suitable nesting habitat will not be modified.
Fisher (Bureau Sensitive).	The harvest units are adjacent to suitable natal and foraging habitat. The harvest units are expected to be used for travel	The action will not affect natal or foraging habitat in a measurable way.

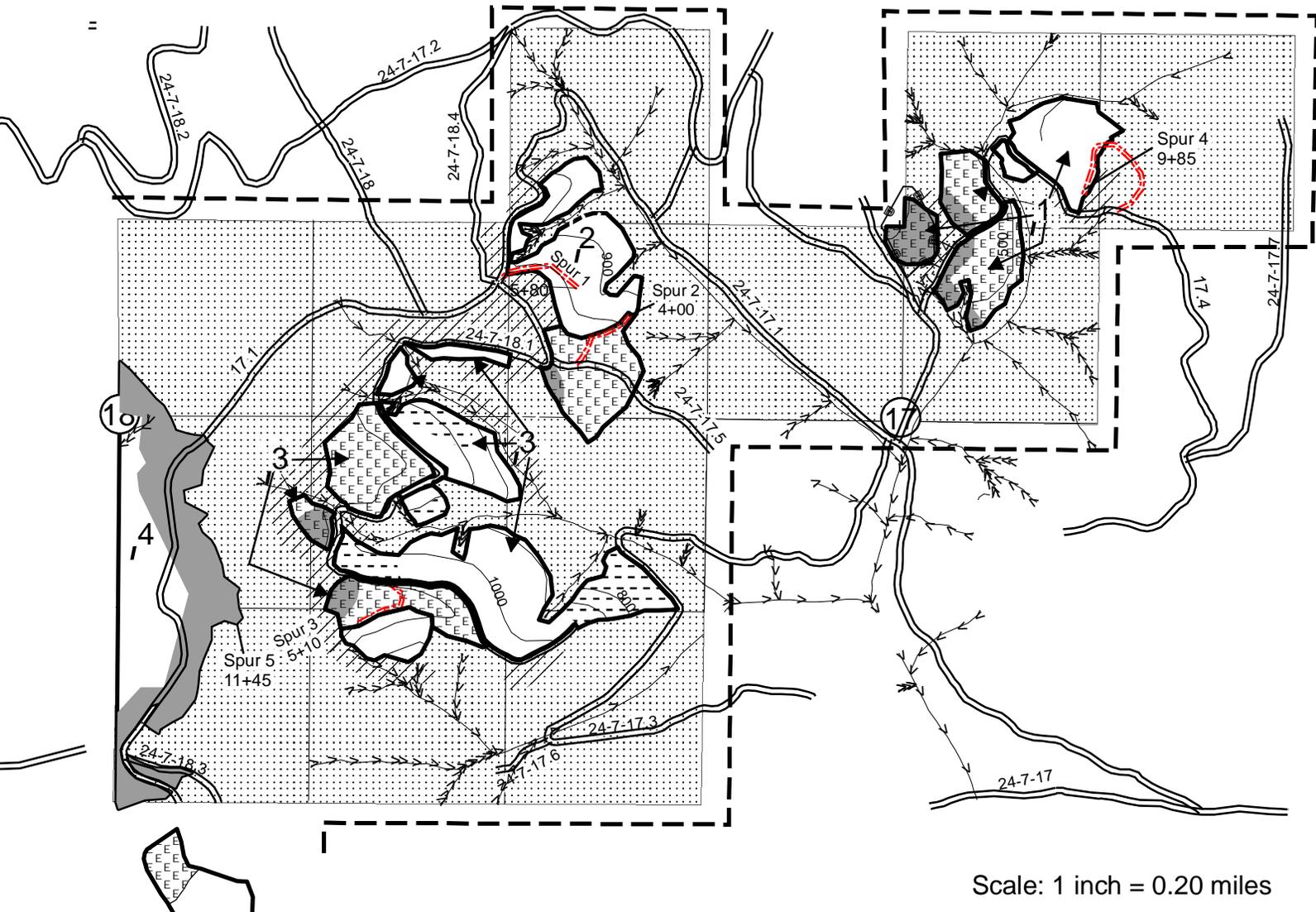
Context (What?)	Intensity (How Much?)	Reason for not being significant.
	between stands of suitable habitat. The nearest recorded fisher observation occurred in the year 2000 approximately 11.7 miles to the southwest of the proposed project area (ONHP 2007).	
Fringed Myotis (Bureau Sensitive).	The harvest units contain a total of thirteen large snags that may be suitable roosting habitat for fringed myotis bats. In addition, suitable habitat (e.g. late-successional forest associated with water; caves, rock crevices) is adjacent to the project area. This species is expected to roost and forage within the project area. The closest recorded fringed myotis observation was located 1.9 miles southwest of the project area.	Adjacent suitable habitat will not be modified or removed. PDFs for large snags will maintain suitable roosting habitat within unit boundaries. The action will not affect the forage opportunities or quality for fringed myotis bats in a measurable way.
Northwestern Pond Turtle (Bureau Sensitive).	Suitable habitat for the pond turtle may be present in a pump chance located on private land, in the SE¼ of T24S-R07W-Section 19. Pond turtles may overwinter in the upland habitat. The nearest pond turtle observation recorded was located approximately 800 meters (0.5 miles) south of the project area.	The action will not affect upland overwintering habitat in a measurable way.
Purple Martin (Bureau Sensitive).	The harvest units do not contain suitable habitat (e.g. open areas with snags) for purple martins. Purple martins may forage over the canopy of the existing stand.	The action will not affect the forage opportunities or quality for purple martins in a measurable way.
Spotted Tail-dropper (Bureau Sensitive).	The harvest units contain habitat suitable for the spotted tail-dropper (e.g. moist coniferous forest with a	No measurable impact to the spotted tail-dropper will occur since the post-treatment stand condition (i.e. maintaining hardwoods and down

Context (What?)	Intensity (How Much?)	Reason for not being significant.
	substantial hardwood component), but there are no known sites within the project area.	woody debris) appears to fall within the range of suitability for this species and its con-specifics.
Townsend's Big-eared Bat (Bureau Sensitive).	The harvest units contain a total of thirteen large snags that may be suitable roosting habitat for Townsend's big-eared bats. In addition, suitable habitat (e.g. late-successional forest associated with water; caves, rock crevices) is adjacent to the project area. The species is expected to roost and forage in the project area.	Adjacent suitable habitat will not be modified or removed. PDFs for large snags will maintain suitable roosting habitat within unit boundaries. The action will not affect the forage opportunities or quality for Townsend's big-eared bats in a measurable way.
White-tailed Kite (Bureau Sensitive).	The harvest units do not contain and are not adjacent to suitable habitat (e.g. open grasslands, meadows, farmlands, etc.). Suitable habitat is located approximately 800 meters from the proposed project area.	The action will not affect the forage opportunities in a measurable way.
Bureau Sensitive Wildlife Species.	Evaluation of the remaining Sensitive wildlife species was completed in September 2007 and no known sites or concerns were identified (except for those species discussed above).	No impacts to the remaining BS or BA wildlife species will occur since there are no known sites within the project area.
Bureau Strategic Wildlife Species.	There are no known detections of Strategic Species, including broadwhorl tightcoil, pristine springsnail, Klamath tail-dropper, Merlin, or giant earthworm within or near the project area (Oregon Natural Heritage Program database, 2007).	Districts are required to enter occurrence data into the corporate database (GeoBOB) when sites of Strategic Species are discovered but they will not be considered as Special Status Species for management purposes (IM-OR-2007-072).

Figure 1. Darth Raider Commercial Thinning & Density Management: Units #1-4.

District	Township	Range	Section	Meridian
ROSEBURG	24S	7W	17&18	WILLAMETTE

2



LEGEND

- | | | | |
|--|---|--|---------------------------|
|  | Harvest Area - Cable Yarding | # | Found Corner |
|  | Harvest Area - Ground Based |  | Stream |
|  | Reserve Area |  | Spur To Be Constructed |
|  | Marbled Murrelet (100 yd.)
Seasonally Restricted Operations Area |  | Boundary of Cutting Area |
|  | Marbled Murrelet Habitat Area |  | Boundary of Contract Area |
| | |  | Existing Rocked Roads |
| | |  | Soil Moisture Restriction |

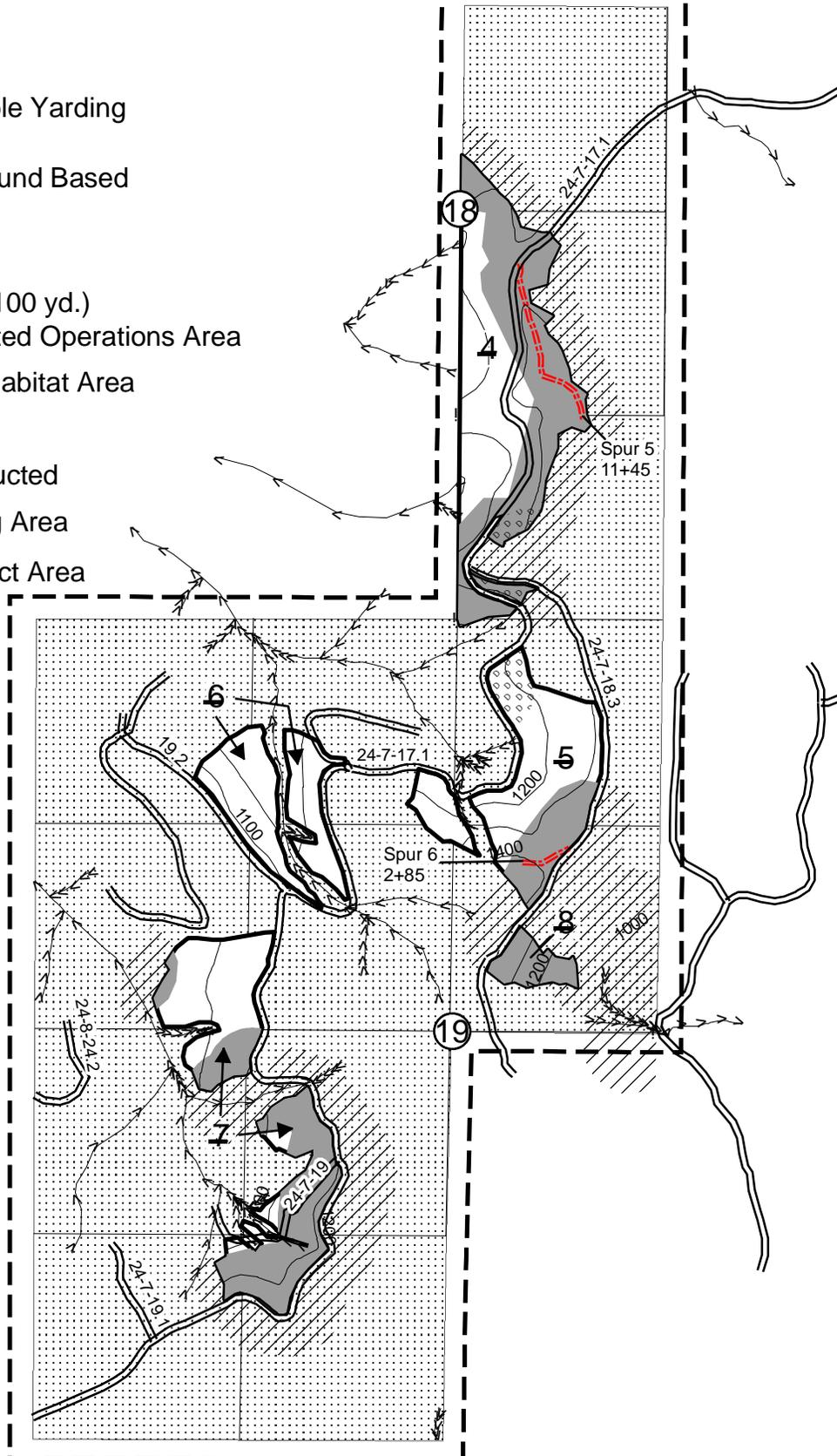
Figure 2. Darth Raider Commercial Thinning & Density Management: Units #4-8.

District	Township	Range	Section	Meridian
ROSEBURG	24S	7W	18 & 19	WILLAMETTE

2

LEGEND

-  Harvest Area - Cable Yarding
-  Harvest Area - Ground Based
-  Reserve Area
-  Marbled Murrelet (100 yd.) Seasonally Restricted Operations Area
-  Marbled Murrelet Habitat Area
-  Existing Road
-  Spur To Be Constructed
-  Boundary of Cutting Area
-  Boundary of Contract Area
-  Stream
-  # Found Corner



Scale: 1 inch = 0.20 miles